

CLAIMS

1. A system for detecting particles on a vehicle having an outer surface comprising:

2 a housing including

a wall capable of being placed in a test position adjacent to, but not in contact with,

4 a portion of the outer surface of the vehicle; and

an elongate sealing member fastened to said housing along a perimeter surrounding

6 said wall, said elongate sealing member having a contact surface facing away from said wall, said
contact surface contacting the outer surface of the vehicle to define a test volume when said wall is
8 in said test position;

a gas flow system comprising

10 at least one gas inlet extending through said wall for providing a gas stream against
the surface of the vehicle within the test volume;

12 a gas outlet for gas to exit the test volume; and

detector means for detecting the presence of particles in the gas passing through said gas

14 outlet.

2. The system of claim 1 wherein said wall is flexible, and said housing further
comprises means for flexing said wall to conform to the contour of the portion of the outer surface
of the vehicle.

3. The system of claim 2 wherein said housing and said wall consist of upper and lower parts hinged at their intersection, wherein said upper part is adjusted relative to said lower part to conform to the vehicle surface.

4. The system of claim 1 wherein said sealing member comprises a hollow bellows having one end extending along the perimeter and an opposing end; said housing further comprising activating means for moving said opposing end of said bellows against the outer surface of the vehicle.

5. The system of claim 4 wherein said housing further comprises a plurality of rigid stops spaced around said wall, each stop having one end extending from said wall and an opposing end for contacting the vehicle surface to keep the wall spaced from the vehicle surface.

6. The system of claim 1 wherein said sealing member comprises a continuous band of thin, flexible material, said band having one edge extending along the perimeter and an opposing edge for contacting and conforming to the vehicle surface.

7. The system of claim 1 wherein said gas flow system comprises a plurality of gas inlets distributed on said wall, wherein the gas stream impinges substantially the entire surface of the vehicle opposite said wall.

8. The system of claim 7 wherein said gas outlet extends across the lower portion of said wall.

9. The system of claim 1 wherein said gas flow system further comprises a confined path for gas exiting the test volume; and said detector means has an input port for receiving all gas passing through said confined path and an output port.

10. The system of claim 9 wherein said gas flow system further comprises means for applying a lower gas pressure to said output port of said detector than is on said input port of said detector, whereby gas from the test volume is drawn through said gas outlet to said detector.

11. The system of claim 10 wherein said sealing means completely surrounds said wall.

12. The system of claim 9 wherein said detector means comprises a particle collection device having said input port, and a particle detector for determining if particles are present in said collection device.